NERSC 9 (N9) Project Description

General Description of Work

This project adds Electrical and Mechanical capacity to an existing High Performance Computing (HPC) facility. The scope of work for NERSC 9 Facility Upgrade Project is depicted in the drawing package NERSC 9 Expansion 60% Design Package Development, 2/26/2016 - FOR REVIEW which shows both Task A and B scopes combined and will be separated into Facility Enhancement (FE) and Site Preparation (SP) tasks at the 100% Design Developments documents. The drawings show the threshold/bid scope (hereinafter "Base Scope") and potential add alternates scope (hereinafter "Additional Scope"). The following table is provided to assist with defining the scope of work.

	Base Scope	**Additional Scope Package No. 1**	**Additional Scope Package No. 2**
HPC Power Capacity	**Add 3 new** 2.5MW HPC substations	**Add 2 new** 2.5MW HPC substations *Results in a net total of 5 new substations*	NA
Liquid Cooling Capacity	**Add 2 new** 3.375MW cooling towers, 6 pumps, 3 heat exchangers, & distribution piping	**Add 1 new** 3.375MW cooling tower *Results in a net total of 3 new cooling towers*	NA
Air Cooling Capacity	**Add 2 new** 60K CFM air handling units	**Add 2 new** 60K CFM air handling units *Results in a net total of 4 new AHUs*	NA
Uninterruptible Power Capacity	NA	NA	**Add 1 new** 1.1MW UPS
Generator Power	NA	NA	**Add 1 new** 1.25MW Generator Set
Expected Value Range	**$21-29M**		

With the exception of the "Additional Scope Package No. 2" column, the construction duration is expected to be similar for Base Scope and Additional Scope Package No. 1 scenarios assuming the scope decision is made at Phase 2 (option) award.

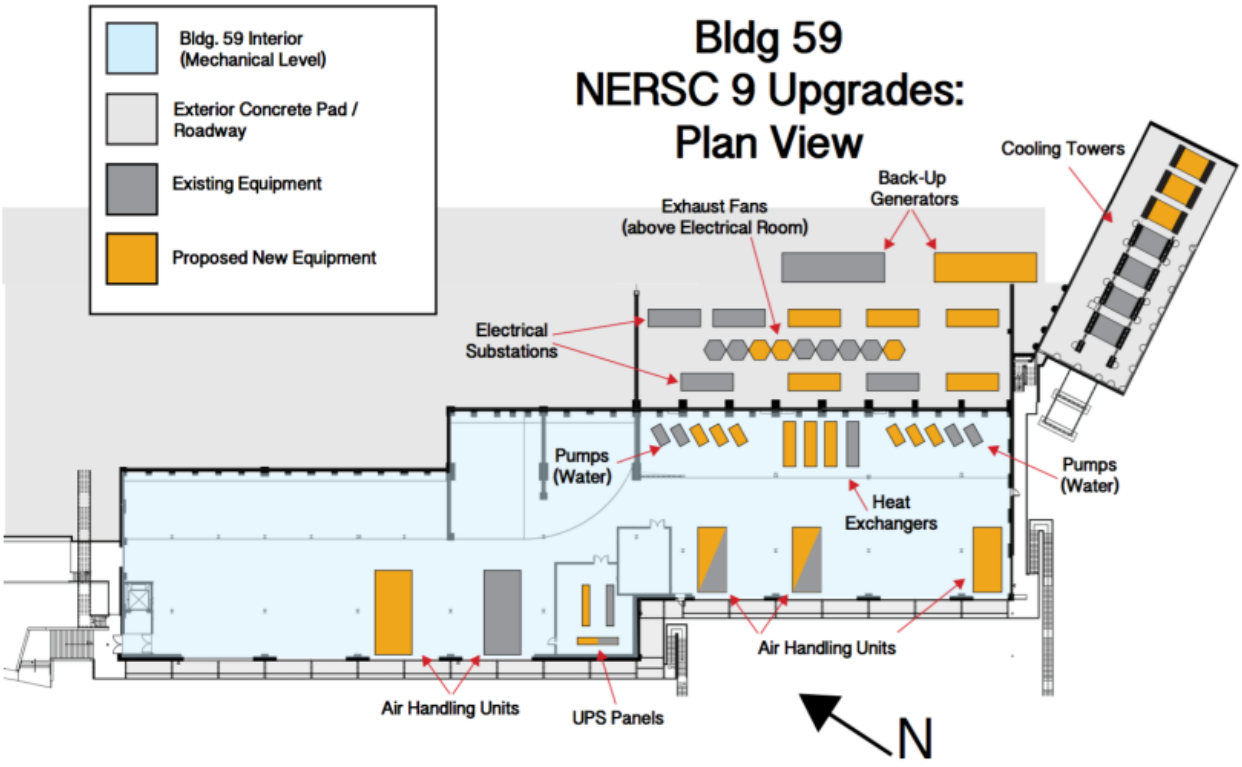
Description of Work by Task

Task A – Facility Enhancements (FE)			
Scope			
	Task A Base Scope	**Task A Additional Scope Package No. 1**	**Task A Additional Scope Package No. 2**
HPC Power Capacity	• 3 new 2.5MW Substations	• 2 additional new 2.5MW Substations	NA
Liquid Cooling Capacity	• 2 new 3.375MW Cooling Towers	• 1 additional new 3.375MW Cooling Tower	NA
Air Cooling Capacity	• 2 new 60K CFM Air Handling Units	• 2 additional new 60K CFM Air Handling Units	NA
Uninterruptible Power Capacity	NA	NA	• 1 new 1.1MW UPS
Generator Power	NA	NA	• 1 new 1.25MW Generator
Pricing			
Phase 1 Preconstruction and Bid (CM) Services	$ [insert price in the RFP Form] Price for Phase 1 Preconstruction & Bid Services **(for Task A - Base Scope)**	$ [insert price in the RFP Form] Additional Price for Phase 1 Preconstruction & Bid Services **(for Task A - Alternate No. 1 Scope)**	$ [insert price in the RFP Form] Additional Price for Phase 1 Preconstruction & Bid Services **(for Task A - Alternate No. 2 Scope)**
Phase 2 (option) Construction (GC) Services	$ [insert price in the RFP Form] Option Price for Phase 2 General Contracting (GC) Services **(for Task A - Base Scope)**	$ [insert price in the RFP Form] Additional Option Price for Phase 1 General Contracting (GC) Services **(for Task A - Alternate No. 1 Scope)**	$ [insert price in the RFP Form] Additional Option Price for Phase 1 General Contracting (GC) Services **(for Task A - Alternate No. 1 Scope)**

Task B – Site Preparation (SP)	
Scope	
• Distribution piping in mechanical space • New/retrofit manifolds under computer floor • 480V Branch circuit installation from distribution panels to HPC units, including cable trays, circuit breakers • Cable tested, safely capped, ready for termination • System connection to power/water • Commissioning	
Pricing	
Phase 1 Preconstruction and Bid (CM) Services	$ [insert price in the RFP Form] Price for Phase 1 Preconstruction & Bid Services **(for Task B Scope)**
Phase 2 (option) Construction (GC) Services	$ [insert price in the RFP Form] Option Price for Phase 2 General Contracting (GC) Services **(for Task B Scope)**

Task A - FE Facility Enhancement (FE) scope includes:

- Cooling towers on existing foundations
- Air handling units, heat exchangers, cooling water pumps adjacent to existing units on mechanical level
- Power distribution from existing Medium Voltage Switchgear to new substations
- Conductors from new substations to new distribution panelboards on computer floor
- Controls installation and initial programming
- Phase 1 commissioning

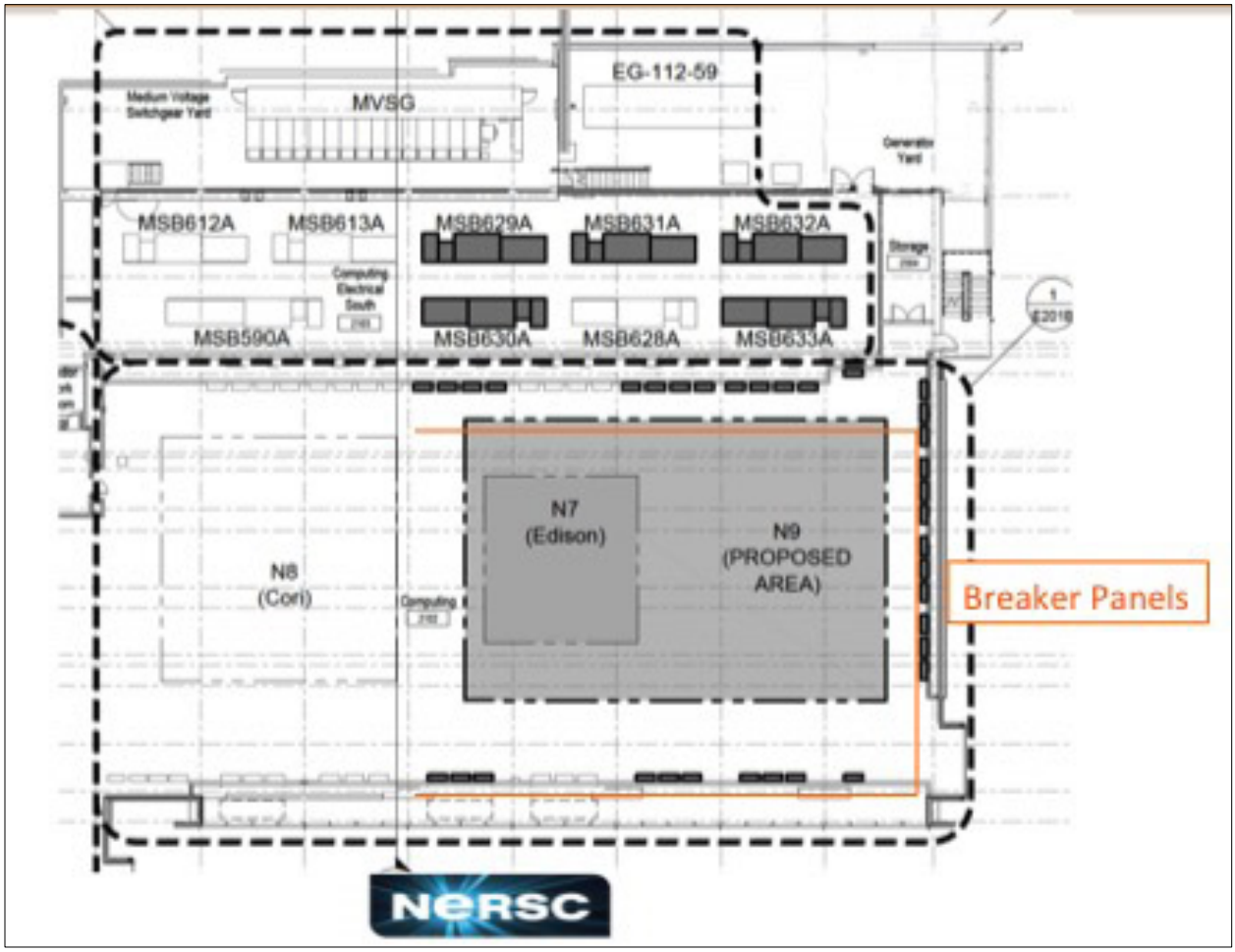


Photographs of existing Mechanical level AHU's for NERSC 7 & 8 provided for reference only.

Photographs of existing Mechanical level Closed Loop pumps and heat exchanger for NERSC 7 & 8 provided for reference only.

Photograph of existing Mechanical level Tower Loop pumps for NERSC 7 & 8 provided for reference only.

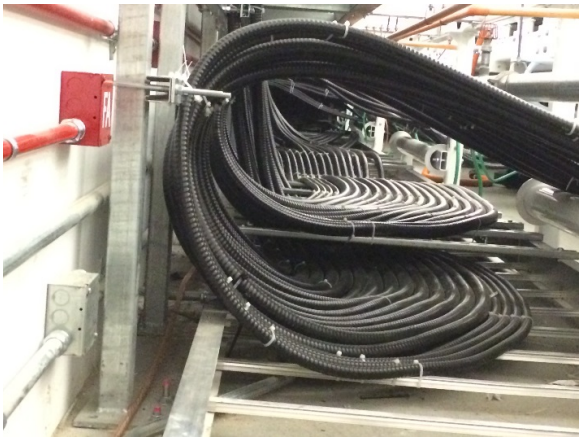
Plan view of Computer floor showing Breaker Panels:



Task B - Site Preparation (SP) Scope includes:

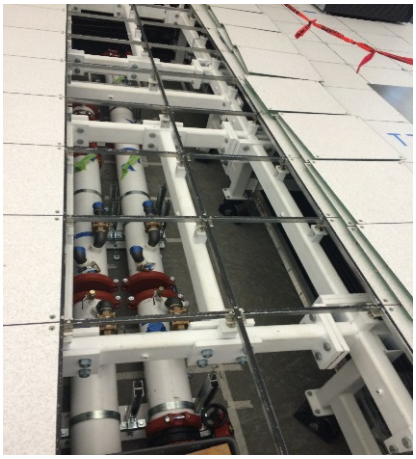
- Distribution piping in mechanical space
- New/retrofit manifolds under computer floor
- 480V Branch circuit installation from distribution panels to HPC units
  - Including cable trays, circuit breakers
  - Cable tested, safely capped, ready for termination
- System connection to power/water
- Phase 2 commissioning

Photographs of existing underfloor cable installation across seismic joint for NERSC 7 & 8 provided for reference only.



Photographs of existing underfloor cable tray installation and access conditions for NERSC 7 & 8 provided for reference only.

Photographs of existing underfloor distribution piping installation for NERSC 7 & 8 provided for reference only.



Photographs of existing Mechanical level distribution piping installation for NERSC 7 & 8 provided for reference only.